

G. B. BRAYTON.
Steam Generator.

No. 53,399.

Patented March 27, 1866.

Fig. 4.

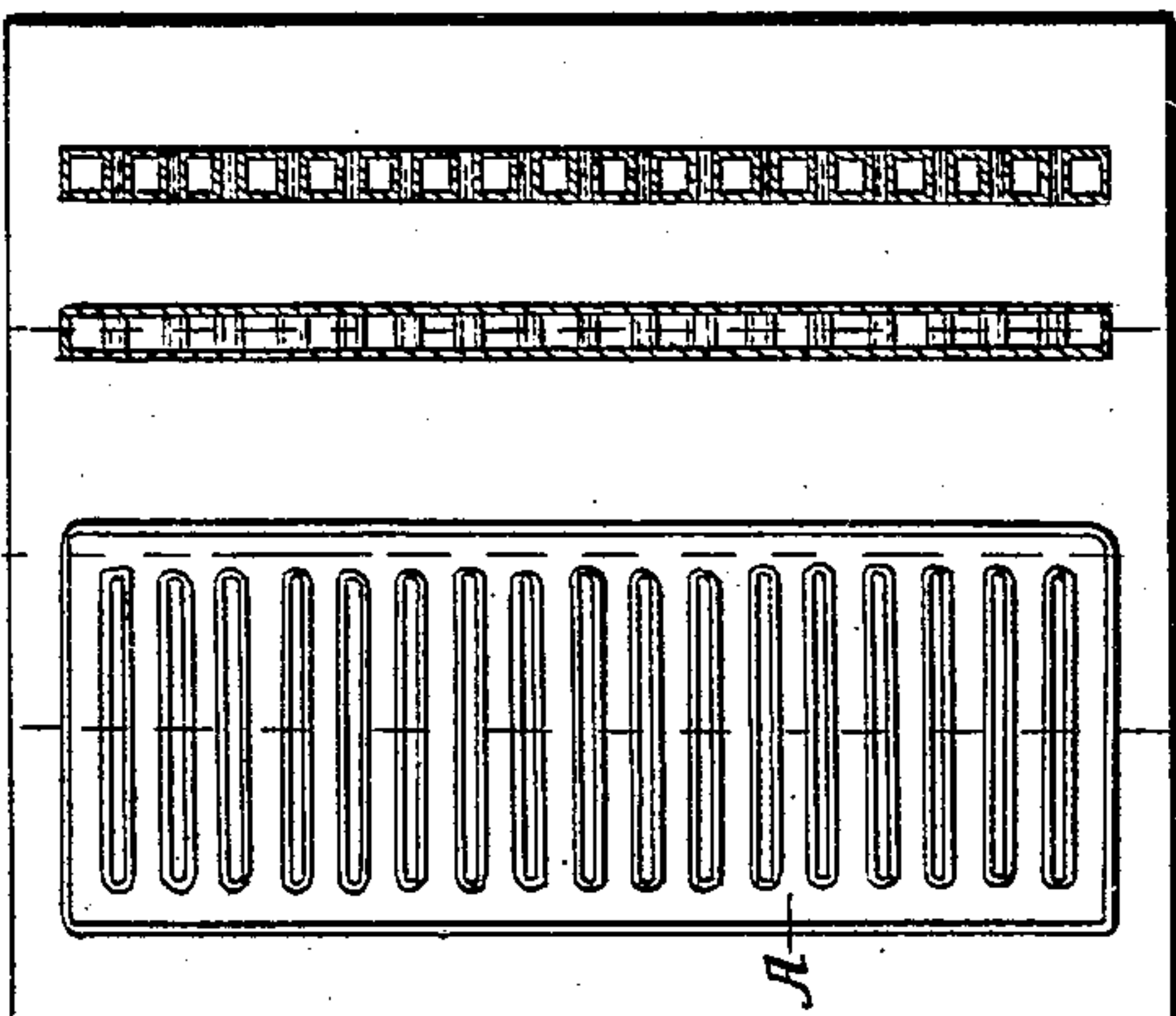


Fig. 2.

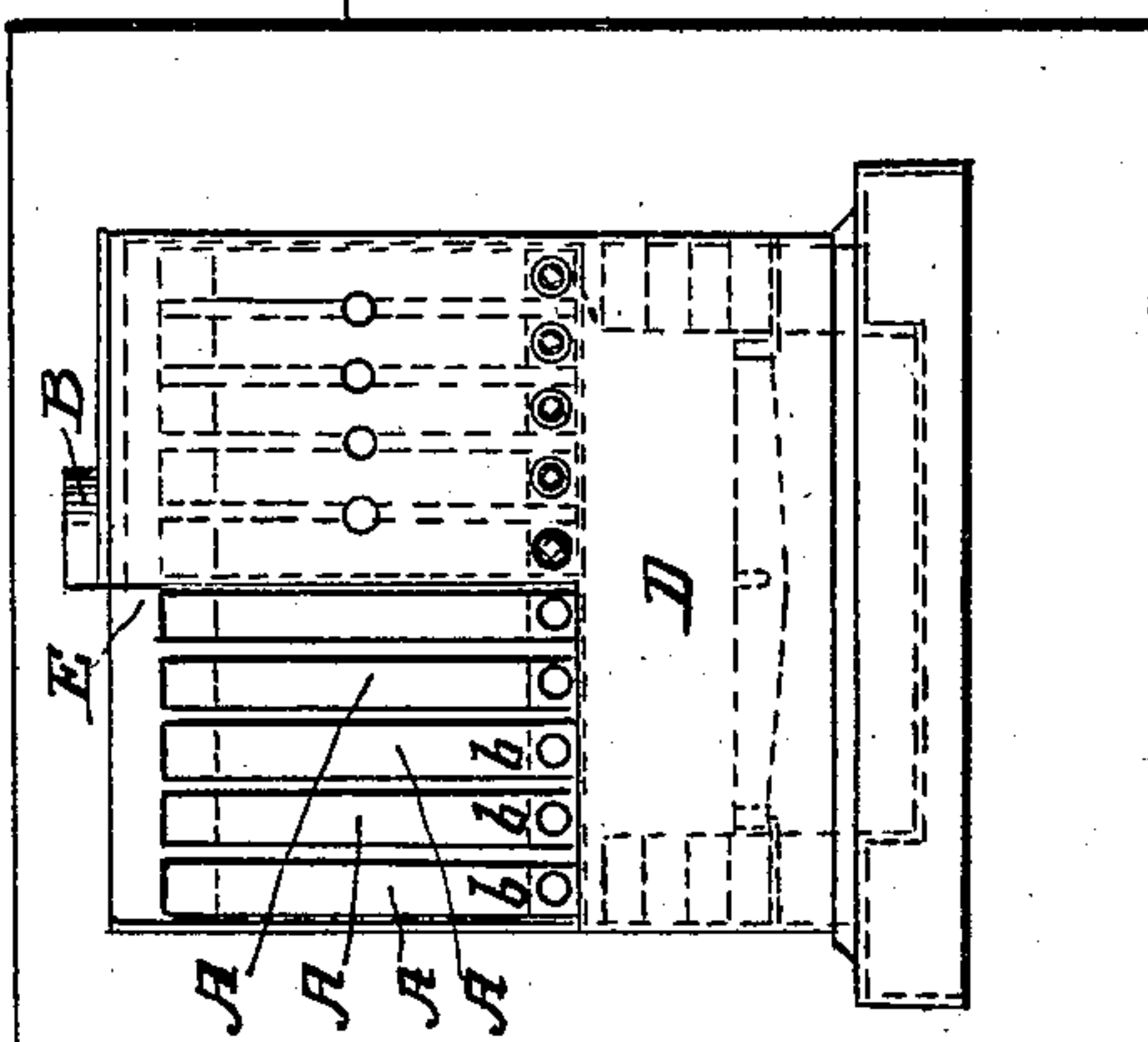


Fig. 3.

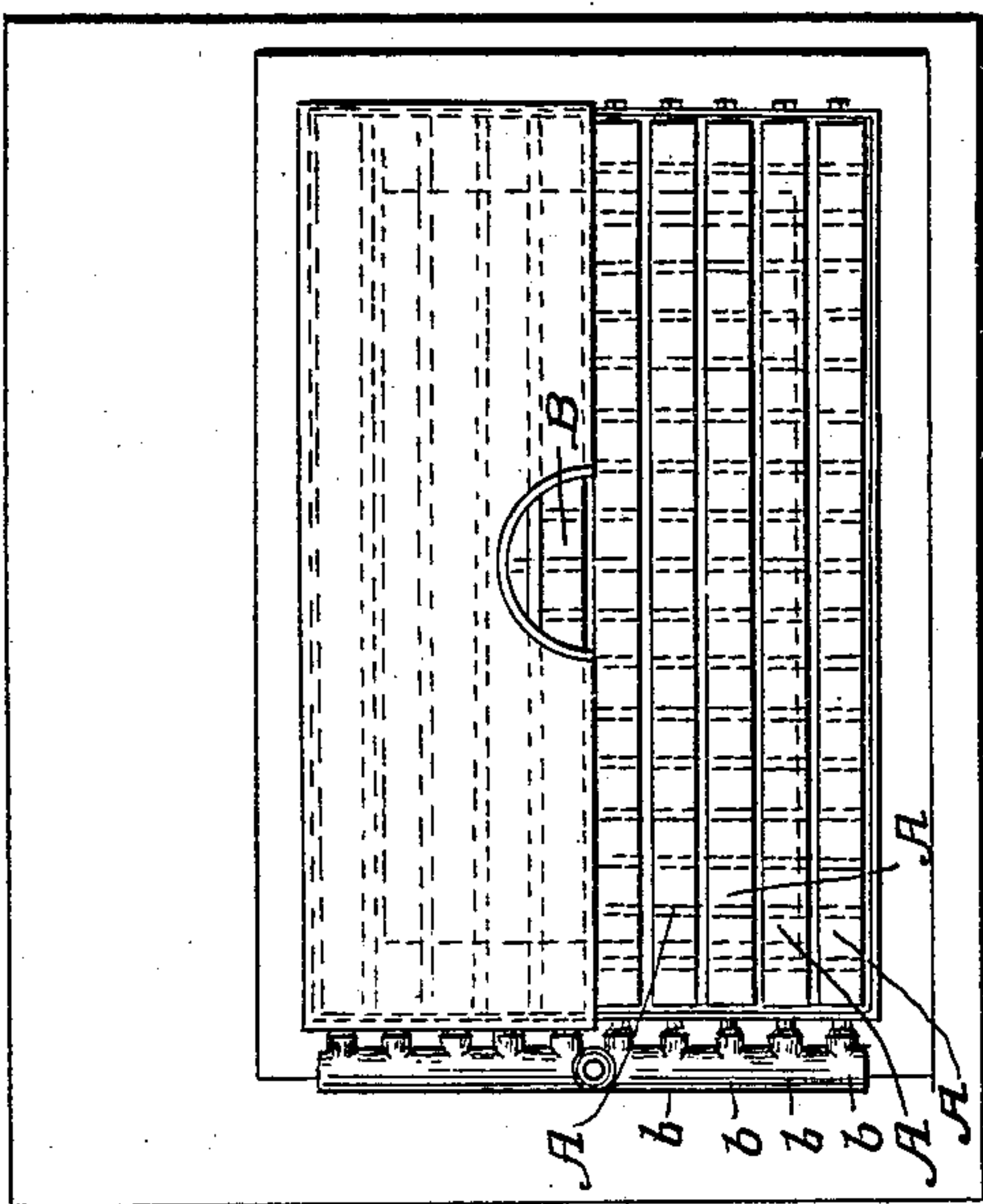
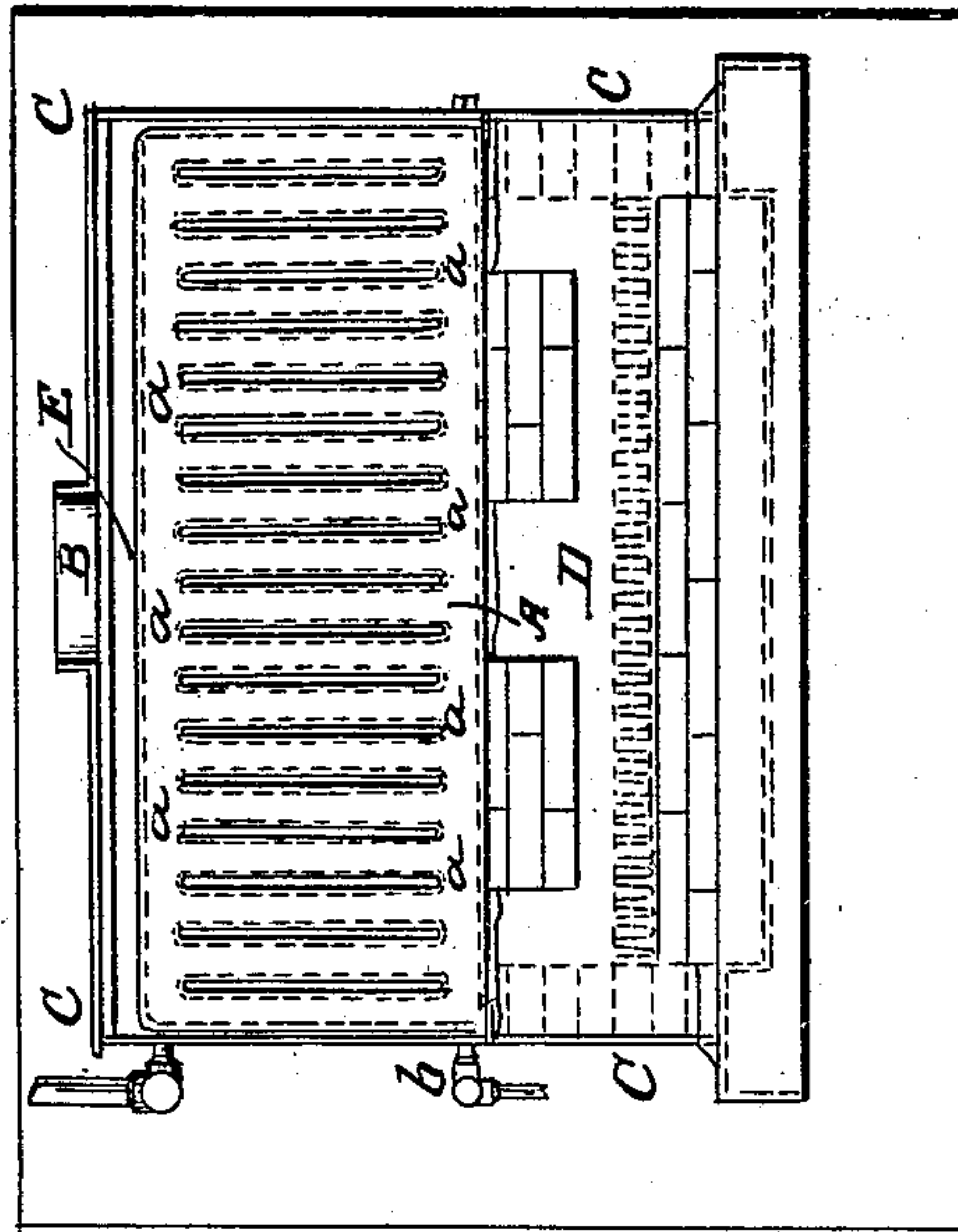


Fig. 1.



Witnesses:
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GEO. B. BRAYTON, OF BOSTON, MASSACHUSETTS.

STEAM-GENERATOR.

Specification forming part of Letters Patent No. 53,399, dated March 27, 1866.

To all whom it may concern:

Be it known that I, GEORGE B. BRAYTON, of the city of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented a new and useful Improvement in Steam-Generators; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is a front elevation with the casing removed. Fig. 2 is an end elevation. Fig. 3 is a plan. Fig. 4 represents, in longitudinal and transverse section, one of the compartments of the generator.

My invention mainly consists in the use of a series of compartments within which the steam is generated, connected together at their tops and bottoms to allow of a circulation of the water and steam, each compartment of the series having its interior space broken by transverse partitions, which have the effect of partially confining the water and steam in spaces of small dimensions, while such partitions serve the purpose of stay-bolts to keep in place the walls of the main compartments.

In the accompanying drawings, A A A represent a series of compartments, each of which, in the present instance, is rectangular in form, and may be, for example, four feet in length by two feet in height and of four inches in thickness, or of any other dimensions, though it will be well to preserve nearly the proportions given. In Fig. 1 is seen the side of one of these compartments, which exhibits a series of openings, *a a a*, which extend through the compartment, and are surrounded by a wall connecting the opposite sides. Each of these rectangular compartments is intended to be made of cast-iron, the sides, ends, and walls surrounding the loop-shaped openings being cast in one piece. The drawings exhibit one row of loop-holes only, and consequently there will be in such case but one set of walls, which will tie the sides of the compartment together. Two sets will, however, be found of advantage in case the generator is of large size, and enough should be in all instances employed to insure the requisite strength and to subdivide into small masses the body of water within the compartments. The several compartments so constructed are intended to be arranged side by side, as shown in Fig. 2, with a narrow space

between each two for the passage of smoke from the furnace. The cubic measurement of all the spaces between the compartments should be, as nearly as may be, equal to the area of the smoke-flue B at the top of the case or jacket C, which surrounds the furnace and the generators. The several compartments are connected together at the top and bottom by means of pipes *b b b*, whereby the water will stand at the same level in all.

The furnace D is located directly beneath the series of compartments, the flames passing up the spaces between the walls of the same, as through narrow rectangular flues communicating with the space E above the same, from which, through the pipe B, the smoke is conducted to the chimney.

It will be noticed that the method of construction and arrangement here employed admits of the following important advantages: The water is converted into steam while contained in several compartments instead of being in one mass, and thereby the damaging effects arising from an accidental explosion from over pressure is reduced in the proportion of the number of compartments used. In fact, one or more of the compartments may be heated above the water-line to redness, and with a risk of explosion as much less than that which would attend a boiler of ordinary construction with the water in a mass, and with one portion of its shell unduly heated as the superficial area of the portion so exposed to severe strain from such cause is smaller in the one case than the other.

Again, as each compartment is subdivided by the partitions which surround the loops, an immense degree of strength is not only given to the compartment itself, but a uniformity of radiation is secured, from the fact that the fire passes over and around the entire surface of each compartment as well as comes in contact with the surfaces of the walls of the loops, so that severe strains upon the metal arising from unequal expansion are counteracted. Besides, too, in the event of the giving way of any one of the compartments at any point, the partitions would present so many obstacles to the violent and overwhelming rush of steam and water which would attend the breaking of the shell of a boiler where the water was held in a mass. Another great advantage consists in

the proximity with which the several compartments can be placed to each, and still allow sufficient space for the passage of smoke, whereby the greatest amount of absorption of heat consistent with combustion is secured; and, finally, any one of the compartments can be, if necessity requires, easily removed for repairs and the other compartments be continued in use.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A steam-generating apparatus composed of compartments constructed and arranged substantially as described.

2. The use of a vessel for the generation of steam, made with openings *a a a*, and partitions surrounding the same, substantially as described, for the purposes specified.

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Witnesses:

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